DRUGGED DRIVING CONFERENCE

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Toxicology

Presented by:

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Distributed by:

ARIZONA PROSECUTING ATTORNEYS' ADVISORY COUNCIL
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THC DUI Testimony

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- 2,600 cases a year
  - ~68% of the blood DUI cases
- ELISA
- GC/MSMS

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Terms

- DWAI – Driving While Ability Impaired
  - "impaired to the slightest degree"
- DUI – Driving Under the Influence
  - "substantially incapable"
- ANY impairing substance
- Impairment compared to your own normal

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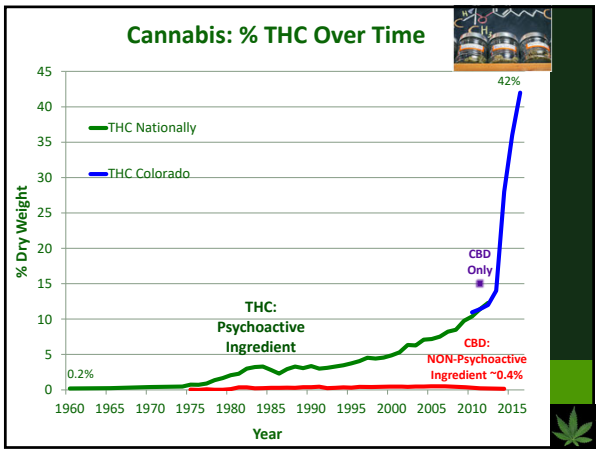

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Testimony

- What we can say
  - What drugs and any metabolites found
  - Possible effects expected
  - How THC is processed by the body
  - How the effects of THC impair driving
  - Was impairment observed consistent with drugs found
  - Explain why chronic use does not make someone safe to drive

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Testimony

- What we can not say
  - When the person used last
  - If the person is a Chronic vs. Occasional user
  - What level of tolerance they had to specific effects
  - How much of the drug they ingested
  - How it was ingested
  - What concentration of THC they had at the time of the stop

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Levels of Impairment

- None
- Slightest degree
- Substantially
- Impaired (no modifier)

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Psychological Effects

- Relaxation
- Euphoria
- Relaxed inhibitions
- Sense of well-being
- Disorientation
- Altered time and space perception
- Lack of concentration
- Impaired learning and memory

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Physiological Effects

- Increased heart rate
- Reddening of the eyes
- Dry mouth and throat
- Increased appetite
- Vasodilation

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Duration of Effects

- Effects of smoking cannabis products are felt within minutes
- Reach their peak in 10-30 minutes
- Typical high lasts approximately 2 hours
- Most behavioral and physiological effects return to baseline levels within 3-5 hours
- Some investigators have demonstrated residual effects in specific behaviors up to 24 hours, such as complex divided attention tasks

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Effects on driving

- Effects of driving last up to approximately 3 hours
- Decreased car handling performance
- Increased reaction times
- Impaired time and distance estimation
- Inability to maintain headway
- Lateral travel
- Subjective sleepiness

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Talking about Testing

For your reference

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How Immunoassay Works

- Class = All Marbles

- Drug = Red Marble

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LOD vs. LOQ

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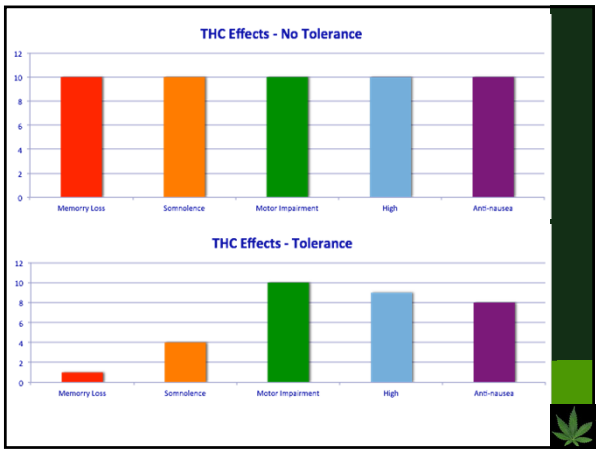

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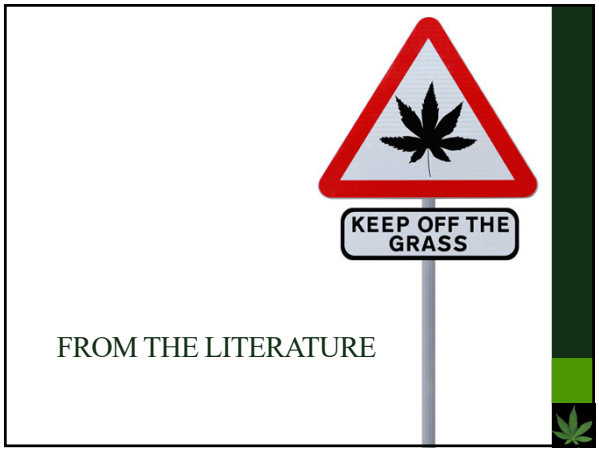

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Top 10 References

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- THC is primarily responsible for the euphoric and impairing effects. THC-OH is an active metabolite. THC-COOH is an inactive metabolite.[3]
- THC concentrations peak rapidly when inhaled
- THC concentrations then drop quickly, generally to below 5 ng/mL blood within 3.5 hours after use in frequent users and after only an hour in occasional users.[3,6]

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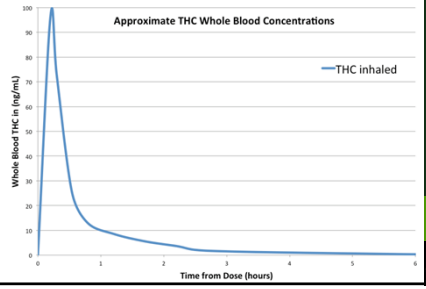
Draw a Picture in court?

Yes!!



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- Recent use of THC causes significant impairment
  - psychomotor skills, impulse control, ability to pay attention, and highly automated behaviors such as critical tracking[10]
  - driving is a highly complex task that requires a person to divide their attention; both of which are impaired by THC[2,9]
  - Impairment is seen with acute use in both frequent and occasional users with THC concentrations at or below 5 ng/mL blood.[5,6,9]
  - When inhaled, THC impairment is highest in the first 1-2 hours after use with continued impairment extending approximately 3-6 hours after use.[4,9]
- Supported by observed signs of impairment, such as failure to complete voluntary roadside maneuvers as a sober person would.[7,8]

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- "Chronic" users – repeated daily THC use
  - residual THC concentrations seen between 1 and 5 ng/mL blood during abstinence
  - Not observed in all chronic users[1,6]
  - cannot fully compensate for impairment caused by THC even with frequent use.[10]
  - Evidence for continued impairment has been observed in chronic users even after 3 weeks of abstinence.[2]
- People who feel impaired sometimes try to overcompensate for the self-interpreted impairment. Overcompensating has little to no effect on impairment in unexpected situations, for extended periods of time, or for complex tasks.[4,10]

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Driving and impairment levels

"Ramaekers [9]

- 2.5 ng/mL 70-90% were indicative of impairment
- 15 ng/mL 100% were impaired

- Just because it is not in the blood does not mean they are not impaired. THC is locked in the brain and lipid layers.
- If it's in the blood it is having an effect on the body

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THC + EtOH

- Effects of ethyl alcohol and THC are more severe than when either is used alone.
- Additive effect on impairment when used in combination, even at relatively low levels.[1]
- Road tracking performance of individuals who had used relatively low amounts of THC and ethyl alcohol concurrently was comparable to the performance of individuals under the influence of significantly higher BACs.[2]

References

1. Bramness, J. G., Khiabani, H. Z., & Mørland, J. (2010). Impairment due to cannabis and ethanol: clinical signs and additive effects. *Addiction (Abingdon, England)*,*105*(6), 1080–7.
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SFSTs and THC

- Roadsides insensitive to THC impairment
  - False negatives
    - Papafotiou The relationship between performance on the standardized field sobriety tests, driving performance (2005)
    - DRE examination characteristics of cannabis impairment (2016)

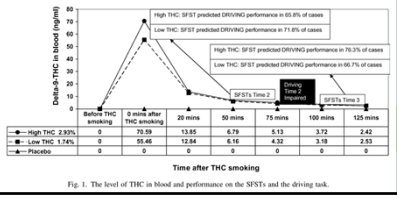

Fig. 1. The level of THC in blood and performance on the SFSTs and the driving task.

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IMPAIRMENT

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Impairment Timeline

- Onset of effects start when smoking
- Impairment is highest in first hour after use
- Acute impairment generally lasts 2-3 hours
  - Can persist 3-6 hours or more, depending on the dose
- Counter-clockwise hysteresis
  - Drug effect increases with time
  - Effects persist beyond concentrations drop in blood
  - Blood/tissue equilibrium ~45mins

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What we see in Court

- Review of police reports
- Tolerance/Medical use
  - "Chronic" what I mean vs. what they mean
  - Residual levels
  - "Better driver" argument
- Old literature vs. new
- No bad driving
- Many multi drug cases
  - Additive effects
- Time of stop vs. time of draw
- The underlying illness was the cause, not the drug

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Good Luck!

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Contact information

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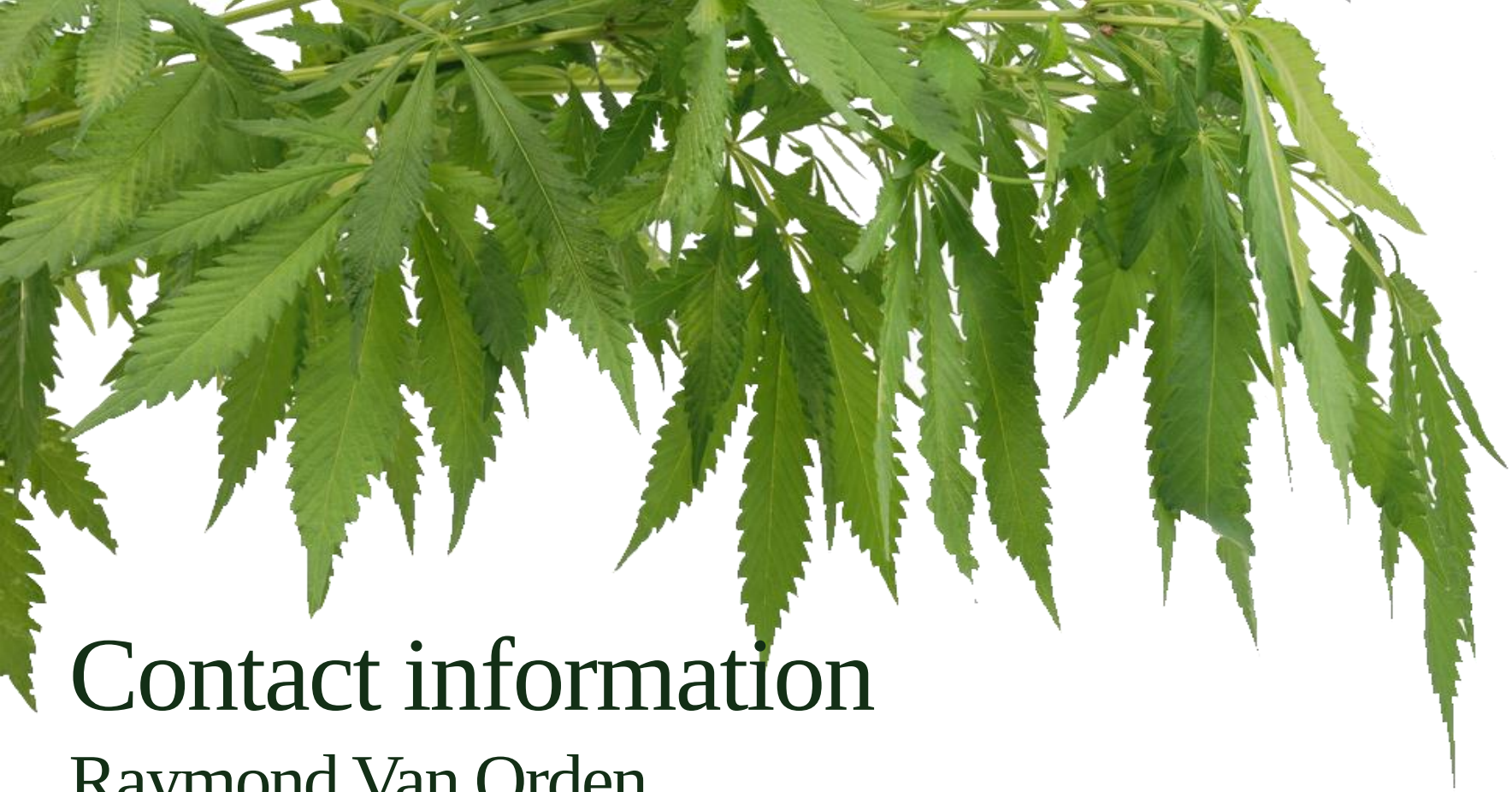

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